Papua New Guinea Earthquake-Related Media Monitoring Log

Communicating with Communities Working Group

12th July 2018

Date	Location	Details	Channel	Standardized Complaint Priority[1]
When was this captured?	**What location is it regarding?**	**Details**	**What media channel was captured?**	
10/07/18		Post-Quake Scientific Investigation needed [*Refer to article 1*]	*Post Courier newspaper* An article by Barney Orere stating that the cause of the earthquake is still to be established.	3
12/07/18		Highlands earthquake aftermath [*Refer to article 2*]	*Post Courier newspaper* An article by Barney Orere stating that much of the fault rupture occurred at shallow depths causing extensive surface deformation, e.g landslides and ground cracking.	3
09/07/18		Challenges existed before earthquake: UN	*Loop PNG [website]* Developmental challenges existed in the Highlands region long before the February 26th earthquake.	3

[1] 1- *Immediate Response* - Applies for all violence related and protection cases and issues including sexual harassment, exploitation, child abuse, and security issues.
2- Urgent Response - Applies for all corruption cases and cases not receiving assistance and issues including Fraud, bribes, and selling food assistance.
3- Ordinary Response - Applies for all other complaints and inquiries.

			http://www.looppng.com/png-news/challenges-existed-earthquake-un-78106 [Video] https://www.facebook.com/looppng/videos/2234680613426462/	
13/04/2018			*Twitter post* Comments on Extractive industries calling the earthquake and 'outage' https://twitter.com/AustralisTerry/status/984707273376153600	3

1. Post Courier, Page 15 – Tuesday 10th July 2018

POST-QUAKE SCIENTIFIC INVESTIGATION NEEDED

To put doubt and suspicion in the minds of affected communities to rest, a proper assessment into the cause(s) of the earthquake and its impact to be undertaken immediately - Dulcie Saroa, Mineral Resources Authority

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WHILE the disaster response to the Highlands earthquake of last February was a massive operation, the cause of the 7.5 magnitude earthquake is yet to be established.

The question of whether it is safe now and to remain calm or when the next big earthquake will come is filtering through the minds of the affected communities. Those questions can be better answered by geologists and geoscientists who study the subsurface and surface earth movements to give assurance to communities of the environmental condition as well as potential dangers that may exist.

What needs to be done is to conduct a full assessment on the ground and provide feedback to affected communities. However, whilst PNG government geologists from Department of Mineral Policy and Geohazard Management (DMPGM) and the Geological Survey Division within the Mineral Resources Authority (MRA) together with UPNG's Earth Sciences Division Centre for Disaster Reduction are well placed to collaboratively carry out these investigations legislative barriers and financial constraints limit these opportunities for providing favourable technical solutions to these challenges.

"It is empirical to collect and measure real-time data from the landslide areas as well as stories on the pre, during and post-disaster to gather the geological scenario that has transpired," says Dulcie Saroa of the Geological Survey Division at MRA.

In a submission to the National Parliament Committee on State of Emergency, Ms Saroa not only pointed out the need for scientific research but also the legislative barrier that will impede such investigations to assure traumatised communities and for a better understanding of how earthquakes happen and why.

She recommended that the government form an Emergency Preparedness Committee comprising relevant sectoral representatives. Distinct from the role of the Disaster function, the Emergency Preparedness Committee will consist mostly of geoscientists, who will, based on sound research undertakings, advise the government on resettlement plans for affected communities to stable sites if required as part of their disaster reduction and mitigation efforts.

"With ongoing research based on this recent disaster and continuous monitoring and field investigation into other potential disaster-prone areas in the country and by providing constant situation reports to government, PNG can appreciate its preparedness efforts to combating future natural disasters given its setting within the 'Pacific Ring of Fire' while thriving on its core goals of promoting sustainable development and inclusive growth in improving the quality of life of our people," Ms Saroa said.

The ground assessment of the damage and the potential environmental health impacts to communities in containment mobility from landslides, floods, etcetera, and dissemination of natural hazard awareness and educating the communities to manage health and safety threats are the most significant and urgent tasks at present. This investigation should be carried out as a matter of urgency.

While Geoscience Australia's report on the February 26 Hela Southern Highlands earthquake may have provided a certain level of comfort to those affected, doubts and fear of another tragic event still exists among the people and demands for further enquiry and investigation into the disaster incident.

Ms Saroa said the GA report documented historical sequential records of the earthquake within the Southern Highlands Seismic Zone while making comparisons to recent events which was sufficient for public consumption to clear doubts and suspicions on the causes of the earthquakes. However, local geoscience expertise needs to be nationally recognised and distinctively realigned to collaboratively engage in natural disaster coordination efforts in future. There will be more on this point in a follow-up feature in the coming weeks so stay with us.

Papua New Guinea's 7.5 earthquakes

• MRA's scientists - Moira Lunge, Senior Exploration Geologist and Dulcie Saroa (Right), Manager, Geological Mapping.

At a glance

The earthquake of 26 February struck at 3:44am hitting the Highlands region. The epicenter was 30km south of Tari town. A series of aftershocks including a magnitude 6.7 quake on 8 March in the same area and M6.6 quake off the coast of New Ireland caused widespread panic. According to preliminary estimates and latest earthquake intensity mapping, around 544,000 people in five provinces were exposed to strong and violent shaking and more than 270,000 people needed immediate assistance.

Ms Saroa's personal analysis of the causes of the earthquake were her initial observations and monitoring of the seismic motions in the months, weeks and days preceding the February 26 catastrophe. She particularlynoted that the ongoing collision of the Indo-Australian Plate with the Pacific Plate caused readjustment of the North Bismarck Sea Plate to shift in an anticlockwise structural reactivation causing the corresponding East Sepik's Kadovar (5 January, 2018) and Madang's Manam volcanic emissions on 4 January, three days after the eruption of Kadovar while East Sepik's Angoram earthquake five days prior (21 February 2018), had a magnitude of 4.7 at 143km depth.

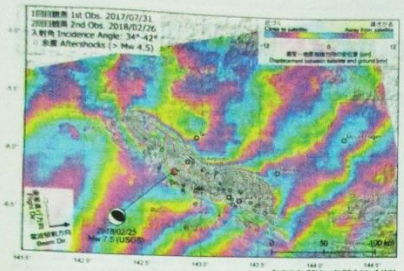
In accommodating stress and structural readjustments of the North Bismarck Sea Plate, the Southern Highlands Seismic Zone which is a major continental boundary had to give way to a massive earthquake at more shallower levels such as the 35km depth that triggered a differential accommodation space of 100km between Angoram's 143km depth and Southern Highlands Province's 35km depth resulting in the massive landslide tragedy.

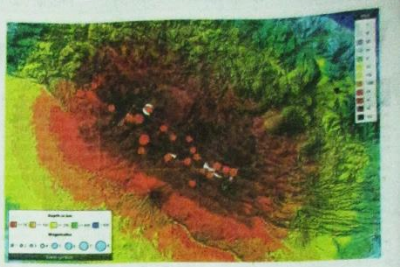
While these personal observations were based on seismic data generated through the United States Geological Survey Earthquake Monitoring website, ground truth by geologists into the disaster area has yet to be undertaken to confirm these analogies.

NEXT THURSDAY: The Story behind the story.

2. Post Courier, Page 12 – Thursday 12th July 2018

HIGHLANDS EARTHQUAKE AFTERMATH





• Figure 1. Source: Geoscience Australia. Readings at the bottom of page.

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Much of the fault rupture occurred at shallow depths causing extensive surface deformation, e.g landslides and ground cracking

THE story behind the story –
When the magnitude 7.5 earthquake struck the Highlands region on 26 February, there was significant public concern that industrial activities such as mining and hydrocarbon exploration and production in the Highlands had something to do with it. A series of aftershocks including a magnitude 6.7 quake on 8 March in the same area and M6.8 quake off the coast of New Ireland caused widespread panic.

Suspicion and fears of the strong earthquake and aftershocks have been explained by Geoscience Australia who said the 26 February earthquake was highly unlikely to have been triggered through mining and hydrocarbon exploration and extraction activities.

Geoscience Australia published its professional opinion in a summary assessment dated April, 2018. The summary was prepared on behalf of the Department of Foreign Affairs & Trade for the Government of Papua New Guinea. The document was intended to provide a context for the earthquake's occurrence, in terms of the regional tectonics and historical seismicity.

The executive summary highlights the following points:

- While the 26 February 2018 earthquake was the largest earthquake in the New Guinea highlands since 1900, its occurrence is consistent with the known seismic characteristics of the region.
- The high frequency of earthquakes in this region is due to natural tectonic processes that have been recognised by many geological studies of the region over the past half century.
- The size of the earthquake and intensity of the ground shaking of this event are consistent with the regional plate tectonics that have formed the New Guinea Highlands over millions of years.
- The depth at which this earthquake started (a depth of 17km or more) is not consistent with earthquakes triggered through mining or hydrocarbon exploration and extraction activities, which generally occur at depths less than 5km.
- The 26 February earthquake is highly unlikely to have been triggered through mining or hydrocarbon exploration and extraction activities.

Based on satellite imaging, the earthquake appeared to have ruptured from the hypocenter (the starting depth - 17km) along a 160km-long segment of an existing fault line (see figure 1).

Much of the fault rupture occurred at shallow depths causing extensive surface deformation; example, landslides and ground cracking.

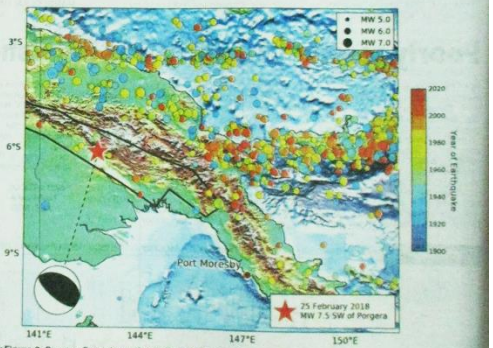
At a glance

The depth at which this earthquake started (a depth of 17km or more) is not consistent with earthquakes triggered through mining or hydrocarbon exploration and extraction activities which generally occur at depths less than 5km.

Preliminary analyses indicated that the level of ground-shaking along the ruptured fault segment could have been 'severe' to 'violent.' These shaking categories corresponded to intensity VIII-IX in the Modified Mercalli Intensity (MMI) scale.

The MMI scale was used internationally to express the degree of ground shaking from an earthquake and its impacts to building. These shaking levels had been verified by online reports through the US geological survey's 'did you feel it?' application. As a consequence of such strong ground-shaking, damage to structures and permanent ground deformation, such as landslides, etcetera, should be expected over a large spatial area, the summary says.

The magnitude of this earthquake was consistent with what would be expected in this region, based on the local plate tectonics, as well as the historical record of earthquakes (Figure 2).



• Figure 2. Source: Geoscience Australia. Readings at the bottom of page.

Papua New Guinea is in a region of frequent earthquake activity and, by corollary, high seismic hazard. It lies on the Pacific Rim 'ring of fire' where two major tectonic plates converge. The Papuan Fold Belt, where the 26 February earthquake occurred, was well known to geologists and seismologists as a zone of active deformation with a high level of earthquake activity.

Geoscience Australia recently computed earthquake recurrence statistics for the region. These statistics suggested that a magnitude 7.5 (or larger) earthquake was expected to occur in the New Guinea Highlands approximately once every 200 years. It was therefore not surprising that, even though the Papuan Fold Belt can generate such large earthquakes, the last one of this size to have occurred before 26 February even may have been beyond the living memory – and even the intergenerational memory – of the region's inhabitants.

Figure 1: LEFT – Satellite (InSAR) image of permanent, earthquake –induced displacement of the ground surface resulting from the 26 February 2018 earthquake (image courtesy of Dr Yu Morishita of Japan's Geospatial Information Agency showing the earthquake rupture over almost a 160km fault length. RIGHT: Estimated level of ground-shaking, expressed in MMI where V is moderate, VII is very strong, VIII is severe and IX is violent (image generated using Port Moresby Geophysical Observatory's earthquake monitoring system by Gempa GmgH. Note the large area expected to experience violent shaking (in red) causing damage and landslides.

GEOSCIENCE AUSTRALIA.

Figure 2: A map of earthquakes of magnitude 5.5 and greater that are known to have occurred between 1904 and 2014 near the location of the 25 February 2018 (UTC) magnitude 7.5 earthquake. The mapped earthquakes are colour-coded by the year in which they occurred. The black box (which extends further into Papua, Indonesia) roughly indicates the New Guinea Southern Highlands Seismic Zone. The "beachball" in the lower left hand corner indicates the sense of the earthquake's rupture orientation and is consistent with the NW-SE trends in local geology and topography. GEOSCIENCE AUSTRALIA.

NEXT TUESDAY'S FEATURE:
Port Moresby's urban guerilla war.